REMARKS

Claims 1, 3, 5-8, 10, 12-15, 17, and 19-20 remain in the application for reconsideration. Claims 2, 3, 5-8, 10, 12-15, 17, and 19-20 have been cancelled without prejudice or disclaimer.

All amendments to the claims comprise subject matter incorporations from dependent claims into independent claims. The amendments introduced herein are believed proper under 37 C.F.R. § 1.116 as they do not introduce any new features which would require a further search and are believed to put the claims in condition for allowance or in better form for appeal. As such, entry of the amendment is respectfully solicited.

Prior Art Rejections:

As amended, independent claim 1 incorporates cancelled claims 2 and 4, independent claim 8 incorporates the cancelled claim 9 and 11, and independent claim 15 incorporates cancelled claims 16 and 18. Thus, all claims now pending stand rejected as set forth starting in paragraph 12 of the Office Action. Specifically, all claims stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,884,037 to Aras et al. (Aras) in view of U.S. Patent 5,745,642 to Ahn, further in view of U.S. Patent 6,442,138 to Yin.

The reference to Yin was newly added by the Examiner in his response to Applicant's Appeal Brief, and Ahn appears to be newly cited in the present Office Action. This rejection is respectfully traversed based on the following discussion.

Embodiments of the Invention:

Briefly, embodiments of the present invention relate to a method and apparatus for maximizing bandwidth usage. A determination is made whether information scheduled to be broadcast is utilizing all bandwidth previously allocated, and if not, additional information is broadcast using the unused portion. Referring to Figure 2, if management system 8 determines that there is unallocated bandwidth in the bandwidth pipe, it chooses 115 opportunistic content that is able to fit into the unoccupied bandwidth for the proper duration, and delivers it to the bandwidth pipe 60 for broadcasting.

In addition, as explained beginning on page 5, line 6 of the application, there is an added layer of complexity, because the management system 8 typically does not know how long the status of under-utilization will last. For example, content that has been guaranteed 2 Mbps for one hour may use only 1 Mbps for the first ten minutes and then fully utilize its allocation of 2 Mbps for the remainder of the hour. Therefore, to make sure that the opportunistic content does not interfere with guaranteed content, the management system 8 provides 130 opportunistic content up until a certain percentage, for example 90 percent, of the total bandwidth has been reached. That percentage, called the configurable rate, can be modified and adjusted.

If, for example, guaranteed content X is only using 85 percent of its allocated bandwidth, and the configurable rate is set to 90 percent, the management system 8 will provide opportunistic content comprising up to 5 percent of the allocated total, bringing utilization up to 90 percent. The management system 8 preferably does not provide

opportunistic content to fill the remaining 10 percent because the system cannot tell ahead of time whether the guaranteed content will remain fixed at 85 percent of the allocated total. At any time the guaranteed content could increase its utilization. Therefore, the configurable rate provides some stability to the system by providing a threshold for opportunistic content that allows for modifications in the bandwidth utilization of the guaranteed content.

When the configurable rate threshold is reached, the management system 8 stops 140 the broadcast of the last opportunistic content added to the bandwidth pipe 60.

Independent claim 1, and similarly independent claims 8 and 15 have been amended to recite "limiting the amount of additional information to a preset percentage of the total available bandwidth" and "broadcasting of a portion of the additional information is stopped when the preset percentage is reached". It is respectfully submitted that this is not shown by the combination of Aras, Ahn, and Yin as set forth by the Examiner.

With regard to Aras and Yin, Applicant previously successfully argued, that Aras appears to be concerned with ways to forecast or predict future bandwidth availability based on current and past trends. Thus, Aras teaches nothing about determining actual bandwidth utilization nor does Aras teach or suggest "broadcasting additional information using an unused portion of the previously allocated bandwidth" as claimed. Further, it was agued that Yin appears to be directed to a system for controlling the admissions of network connection requests. It was further argued that Yin does not appear to teach or suggest "*determining in real time whether information guaranteed a fixed amount of bandwidth for a fixed length of time broadcast digitally is actually utilizing all bandwidth previously allocated to broadcasting the information; and if not, broadcasting additional information using an unused portion of the previously allocated bandwidth*". As recited in the independent claims.

The Examiner has now added Ahn to the combination of Aras and Yin and appears to

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rely on Ahn for teaching determining in real time whether information guaranteed a fixed amount of bandwidth for a fixed length of time broadcast digitally is actually utilizing all bandwidth.

With regard to the claims as now represented, the Examiner makes the argument that Aras has taught the method of "limiting the amount of additional information to a preset bandwidth (column 9, lines 53-61). The Examiner has acknowledged that Aras does not teach that the limit is a preset percentage of available bandwidth and has therefore relied on Yin for this feature. In particular, the Examiner argues that Yin teaches "the use of percentage to indicate the total bandwidth allocated, and the total bandwidth available (column 6, lines 38-44)".

However, even if combined, Ahn, Aras, and Yin do not make obvious the claimed invention. The Examiner does not rely on the new reference to Ahn to teach limiting the additional or opportunistic information broadcast at a predetermined percentage of available bandwidth.

Aras at column 9, lines 53-61 does appear to factor in a "reserve margin" of bandwidth for their available bandwidth prediction model, however, as the Examiner has noted, it does not appear to indicate that this is a percentage as recited in the claims. Further, there is little discussion in Aras about what this "reserve margin" actual involves Figure 6 of Aras would suggest that reserved bandwidth relates to <u>conforming users</u> and <u>non-conforming users</u> which has

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nothing to do with the claims of the present application.

Yin, at column 6, lines 38-44 simply uses the phrase "percentage of total bandwidth". However, if the Examiner reads further, this refers "<u>percentage of total bandwidth of existing connections available to all service classes</u>" . Again, this has nothing to do with Applicant's claimed invention.

In short, Ahn does not appear to teach limiting the amount of additional information broadcast to a percentage of available bandwidth. Aras, while mentioning a reserve margin, does not appear to directly discuss what this may entail and at best Figure 6 suggests that this reserve margin is unrelated to Applicant's claims. Finally, Yin mentions bandwidths and percentages, but dos not remotely suggest that the bandwidth percentage may be to limit additional information that may be broadcast and certainly does not teach or suggest stopping the broadcast of additional information if this limit is exceeded.

What the Examiner has done is attempted to construct the claimed invention from the referenced patents with no independent teaching for the construction he proposes. Applicant has solved a fundamental problem in the area of bandwidth management. Applicant's invention is simply not suggested by the prior art and, therefore, Applicant is entitled to protection sought by the rejected claims.

In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1, 3, 5-8, 10, 12-15, 17, and 19-20 be allowed and that the application be passed to issue.   Please charge any shortages and credit any overcharges to our Deposit Account number 02-2666.

Respectfully submitted,

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